



October 23, 2008

Mr. Ken Landau
Assistant Executive Officer
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Subject: Response to Review of the City of Grass Valley Metals Translator Report

Dear Mr. Landau,

Thank you for forwarding Tetra Tech's comments on the City of Grass Valley Metals Translator Report ("Translator Report") dated September 19, 2008. Clarifications and responses to those comments are detailed below.

COMMENT 1 (verbatim excerpt from September 19, 2008 Memorandum)

We evaluated the reported flows on each sampling date (Table 1 of February 2008 Translator Report) and the translators for copper, lead, and zinc at Station R-2 calculated for each collection date (Appendix A of Translator Report). Based on regression analyses of these data, there is a significant (at an $\alpha = 0.05$), negative relationship between flow and the translators at Station R-2 for copper ($R^2 = 0.33$, $p = 0.039$) and zinc ($R^2 = 0.57$, $p = 0.003$). There is a negative relationship between flow and the translator for lead, but the relationship is not significant ($R^2 = 0.23$, $p = 0.2$). The relationships described in our analysis are different than those presented in Figure 2 of the City's response. It is unclear why our analyses differed from those presented by the City.

RESPONSE 1

The correlation analysis presented in Figure 2 of the City's September 16, 2008 response showed no significant correlation between flow and translator value. That analysis included all events sampled (including the highest flow event of 55 MGD). When the correlation analysis was repeated with this highest flow event removed from the dataset, the R^2 and p values stated in the Tetra Tech memorandum were confirmed. Therefore, the reason for the apparent discrepancy was a difference in the range of observed data used in the analysis.

COMMENT 2

Our analysis indicates that flow does play a role in the ratio of total to dissolved copper and zinc in this system. Because the translator study was conducted under variable flow conditions and those variable flows influenced the translator, I disagree with the City that the flow at which the translator samples were collected represented critical, low flow conditions. As stated in Tetra Tech's June 27, 2008 memo, the translators in this system should be based on at least 10

samples collected during periods approximating the critical, low flow or on 20 or more samples collected over all flow conditions. The analyses presented by the City in their September 16, 2008 letter do not alter the earlier recommendation.

RESPONSE 2

As discussed in the comments above, using all data except the point collected during a creek flow of 55 mgd, there is a slightly negative, but not strong, relationship between flow and translator values. In some instances, higher flows produce lower translator values, and in some instances they produce higher translator values. Historic observed flow in Wolf Creek ranges from 2 – 718 MGD, with an average of 26 MGD. Therefore, analyzing all “below average” flow samples presents a distinction between high and low flow regimes. Translator calculations using all data where flows are less than 26 MGD are compared below to the analysis presented in the Translator Report (where all data with flows less than 55 MGD were used). Analyzing this smaller dataset is more conservative than including all samples collected during the low flow season. Ten samples were collected at flows below 26 MGD, which satisfies the Translator Guidance recommended sampling frequency.

	New Values [Flow <26 MGD]		Translator Report Values [Flow <55 MGD]	
	Copper	Zinc	Copper	Zinc
Acute translator	0.95	0.97	0.94	0.96
Chronic translator	0.84	0.84	0.79	0.78

Based on this analysis, the City believes that the new translator values are slightly more conservative than the values recommended in the Translator Report and would be protective of uses at critical low flows. It is not believed that additional sampling during critical low flow periods would yield significantly different translator values.

COMMENT 3

I agree with the City that the manner in which they handled the dissolved lead values that were below detectable levels in calculating a lead translator was conservative. The problem with the calculation of the lead translator is that it is based on nine sampling events at Station R-2 rather than the minimum recommended number of 10 for low-flow conditions or 20 for all flow conditions. Given that the translators for copper and zinc were significantly related to flow (no such relationship was observed for lead, a fact that may at least partially be due to the high number of “non-detect” values in this limited dataset), it is of concern that the translator for lead was calculated using only nine samples collected over a variety of flows. I do not believe that the data submitted in support of the lead translator satisfies the EPA recommendations for minimum recommended sample size.

RESPONSE 3

In performing the Translator Study, the City used a U.S. EPA approved, low detection limit analytical methodology (*EPA Method 200.8, Determination of Trace Elements in Waters and Wastes by ICP-MS*) and clean sampling techniques for the detection of total and dissolved lead in effluent and Wolf Creek samples. While the recommended number of translator samples (10) with detected values for total and dissolved lead was not reached, it is apparent that dissolved lead does not have a large ambient presence in this system. Further, it does not appear that the

collection of additional samples would likely produce more detected results. By assuming the lead concentration is equal to the detection limit for non-detect samples in the lead translator calculations, the calculations add a layer of conservatism, since the actual dissolved lead concentrations would be lower than the assumed value at the detection limit. Therefore, the resultant lead translators are slightly higher than they would be if lower detection limits were achieved. The California Toxics Rule criteria for dissolved lead in freshwater are 57.6 ug/L (acute) and 2.24 ug/L (chronic) at a hardness of 90 mg/L. The concentrations that have been detected by the City in Wolf Creek were well below these levels.

SUMMARY

Based on conversations with the Tetra Tech reviewer, the City believes that the revised acute and chronic translator values shown above that were derived from the less than 26 MGD creek flow dataset are protective values that can be approved for use in NPDES permitting.

Please contact me if you have additional questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kristine Corneillie", with a stylized flourish at the end.

Kristine Corneillie
Senior Engineer